

We claim:

1. A calcium additive for bread dough comprising:
 - (a) an aqueous solution of an inorganic or an organic acid; and
 - (b) calcium carbonate powder suspended in said aqueous solution of an inorganic or organic acid;

wherein the weight ratio of calcium carbonate to acid is from about 4:1 to about 7:1 and the weight ratio of water to the combined weight of calcium carbonate and acid is from about 1:1 to about 10:1; and wherein the pH of the aqueous solution is from about 3 to about 6.5.
2. The calcium additive of claim 1 wherein the acid is an organic acid.
3. The calcium additive of claim 2 wherein the organic acid is selected from the group consisting of citric acid, fumaric acid, lactic acid, and malic acid.
4. The calcium additive of claim 3 wherein the acid is citric acid.
5. The calcium additive of claim 4 wherein the ratio of calcium carbonate to citric acid is from about 5:1 to about 6:1 by weight.
6. The calcium additive of claim 5 wherein the aqueous solution comprises water in a weight ratio from about 1:1 to about 5:1 based on the combined weight of calcium carbonate and citric acid.
7. The calcium additive of claim 6 wherein the aqueous solution comprises water in a weight ratio from about 1:1 to about 3:1 based on the combined weight of calcium carbonate and citric acid.
8. The calcium additive of claim 1 wherein the pH of the solution is from about 4.0 to about 6.5.

9. The calcium additive of claim 8 wherein the pH of the solution is from about 4.5 to about 5.6.
10. The calcium additive of claim 1 wherein the calcium carbonate is provided as a powder having a mean particle diameter from about 0.05 μm to about 30 μm .
11. The calcium additive of claim 10 wherein the calcium carbonate is provided as a powder having a mean particle diameter from about 10 μm to about 15 μm .
12. A method for preparing a calcium additive comprising the steps of:
 - (a) providing an aqueous solution of an inorganic or an organic acid;
 - (b) providing calcium carbonate powder suspended in said aqueous solution of an inorganic or organic acid; wherein the weight ratio of calcium carbonate to acid is from about 4:1 to about 7:1 and the weight ratio of water to the combined weight of calcium carbonate and acid is from about 1:1 to about 10:1;
 - (c) mixing the resulting suspension of calcium carbonate in an aqueous solution of an inorganic or an organic acid at a mixer speed sufficiently high to maintain the calcium carbonate powder as a substantial homogenous suspension in said aqueous solution; and
 - (d) allowing the aqueous solution to reach a pH of about 3 to about 6.5.
13. The method of claim 12 wherein the acid is an organic acid.
14. The method of claim 13 wherein the organic acid is selected from the group consisting of citric acid, fumaric acid, lactic acid, and malic acid.
15. The method of claim 14 wherein the acid is citric acid.
16. The method of claim 15 wherein the ratio of calcium carbonate to citric acid is from about 5:1 to about 6:1 by weight

17. The method of claim 16 wherein the aqueous solution comprises water in a weight ratio from about 1:1 to about 5:1 based on the combined weight of calcium carbonate and citric acid.
18. The method of claim 17 wherein the aqueous solution comprises water in a weight ratio of about 1:1 to about 3:1 based on the combined weight of calcium carbonate and citric acid.
1. The method of claim 12 wherein the calcium carbonate is provided as a powder having a mean particle diameter from about 0.05 μm to about 30 μm .
20. The method of claim 13 wherein the calcium carbonate is provided as a powder having a mean particle diameter from about 10 μm to about 15 μm .
21. A method of fortifying dough with calcium comprising the steps of:
- (a) providing a calcium additive comprising:
 - (i) an aqueous solution of an inorganic or an organic acid; and
 - (ii) calcium carbonate powder suspended in said aqueous solution of an inorganic or organic acid; wherein the weight ratio of calcium carbonate to acid is from about 4:1 to about 7:1 and the weight ratio of water to the combined weight of calcium carbonate and acid is from about 1:1 to about 10:1; and wherein the pH of the aqueous solution is about 3 to about 6.5; and
 - (b) incorporating the calcium additive into a dough.
22. The method of claim 21 wherein the acid is an organic acid.
23. The method of claim 22 wherein the organic acid is selected from the group consisting of citric acid, fumaric acid, lactic acid, and malic acid.
24. The method of claim 23 wherein the acid is citric acid.
25. The method of claim 24 wherein the ratio of calcium carbonate to citric acid is from about 5:1 to about 6:1 by weight

26. The method of claim 25 wherein the aqueous solution comprises water in a weight ratio from about 1:1 to about 5:1 based on the combined weight of calcium carbonate and citric acid.
27. The method of claim 26 wherein the aqueous solution comprises water in a weight ratio of about 1:1 to about 3:1 based on the combined weight of calcium carbonate and citric acid.
1. The method of claim 21 wherein the calcium carbonate is provided as a powder having a mean particle diameter from about 0.05 μm to about 30 μm .
29. The method of claim 28 wherein the calcium carbonate is provided as a powder having a mean particle diameter from about 10 μm to about 15 μm .
30. The method of claim 21 wherein the dough comprises a leavening agent.
31. The method of claim 30 wherein the leavening agent is yeast.
32. The method of claim 38 wherein the dough has a final pH of about 3.0 to about 6.0.
33. The method of claim 21 wherein the mixture is added to the dough in an amount from about 1 to about 10 % by flour weight based on the total weight of flour.
34. The method of claim 21 wherein the aqueous mixture is added to one of the group consisting of: the sponge in a sponge dough process, the dough in a sponge dough process, the dough in a straight dough process, the dough in a liquid ferment process, the dough in a no-time dough process, or the dough in a continuous mix process.
35. Dough prepared by the method of claim 21.
36. A calcium fortified baked product comprising elemental calcium from about 0.1 % to about 2.2 % by weight, wherein the baked product comprises flour that is substantially free of bran and wheat middlings, and wherein the baked product has a pH from about 3.0 to about 6.5.
37. The calcium fortified baked product of claim 36 wherein the bread has a pH of about 4.0 to about 5.8.

38. The calcium fortified baked product of claim 37 wherein the bread has a pH of about 5.0 to about 5.4.

39. The calcium fortified baked product according to claim 36, wherein the bread product is selected from the group consisting of: a white bread, a wheat bread, a hamburger bun, a roll, a bagel, a pizza crust, a snack food, a Danish, and a muffin.

40. The calcium fortified baked product according to claim 39, wherein the bread product is selected from the group consisting of: a white bread, a hamburger bun, and a roll.

41. The calcium fortified baked product of claim 40 comprising calcium from about 0.8 % to about 1.2 % by weight.

42. A method of fortifying a hamburger bun with calcium the steps of:

(a) providing a calcium additive comprising:

(i) an aqueous solution of citric acid; and

(ii) calcium carbonate powder suspended in said aqueous solution of citric acid; wherein the weight ratio of calcium carbonate to citric acid is from about 4:1 to about 7:1 and the weight ratio of water to the combined weight of calcium carbonate and citric acid is from about 1:1 to about 10:1; and wherein the pH of the aqueous solution is about 3 to about 6.5;

(b) providing a hamburger bun dough comprising wheat flour; and

(c) incorporating said calcium additive into said hamburger bun dough in a quantity sufficient to provide a hamburger bun upon baking having an elemental calcium content from about 0.1 % to about 2.2 % by weight of the hamburger bun.

43. The method of claim 42 wherein said calcium additive is incorporated into said hamburger bun dough in a quantity sufficient to provide a hamburger bun upon baking having an elemental calcium content from about 0.8 % to about 1.8 % by weight of the hamburger bun.

44. The method of claim 43 wherein said calcium additive is incorporated into said hamburger bun dough in a quantity sufficient to provide a hamburger bun upon baking having an elemental calcium content from about 1.0 % to about 1.2 % by weight of the hamburger bun.
45. The method of claim 42 wherein the aqueous solution comprises water in a weight ratio from about 1:1 to about 5:1 based on the combined weight of calcium carbonate and citric acid.
46. The method of claim 45 wherein the aqueous solution comprises water in a weight ratio of about 1:1 to about 3:1 based on the combined weight of calcium carbonate and citric acid.
47. The method of claim 42 wherein said wheat flour comprises patent flour.